IN THE CLAIMS

Please amend the claims as follows:

1. (Previously Presented)   A method including:

providing ventricular stimulations, separated from corresponding preceding atrial depolarizations, occurring during the same cardiac cycle, by different atrioventricular (A-V) delays;

detecting mitral valve closures associated with each ventricular stimulation;

measuring time intervals between the atrial depolarizations and the mitral valve closures; and

selecting, based on the time intervals, an A-V delay for subsequent delivery of ventricular stimulations, in which the selecting the A-V delay includes:

calculating slopes of the time intervals against corresponding A-V delays; and

selecting, based on the slopes, the A-V delay for subsequent delivery of

ventricular stimulations.

2. (Original)   The method of claim **1**, in which detecting mitral valve closures includes detecting an acceleration signal that includes information associated with the mitral valve closures.

3. (Original)   The method of claim **2**, further including highpass filtering the acceleration signal.

4. (Original)   The method of claim **3**, in which highpass filtering the acceleration signal includes at least one of:

(1) removing a baseline component of the acceleration signal; and

(2) differentiating the acceleration signal to form a first derivative acceleration signal.

5. (Original)   The method of claim **4**, further including lowpass filtering the acceleration signal.

6. (Previously Presented)   The method of claim **4**, in which highpass filtering the acceleration signal includes differentiating the acceleration signal to form a first derivative acceleration signal and further including detecting peaks of the first derivative acceleration signal to obtain fiducial points associated with the mitral valve closures.

7. (Previously Presented)   The method of claim **4**, in which highpass filtering the acceleration signal includes differentiating the acceleration signal to form a first derivative acceleration signal and further including detecting negative peaks of the first derivative acceleration signal to obtain fiducial points associated with the mitral valve closure.

8. (Previously Presented)   The method of claim **4**, in which highpass filtering the acceleration signal includes differentiating the acceleration signal to form a first derivative acceleration signal and further including detecting a peak of first derivative acceleration signal that occurs after an R-wave associated with a ventricular contraction and before a P-wave associated with a next atrial contraction to obtain a fiducial point associated with the mitral valve closure associated with said ventricular contraction.

9. (Currently Amended)   The method of claim [[5]] 4, in which highpass filtering the acceleration signal includes differentiating the acceleration signal to form a first derivative acceleration signal and further including:

  lowpass filtering the first derivative acceleration signal; and

  detecting a negative peak of the lowpass filtered first derivative acceleration signal, wherein the negative peak occurs after an R-wave associated with a ventricular contraction and before a P-wave associated with a next atrial contraction to obtain a fiducial point associated with the mitral valve closure associated with said ventricular contraction.

10. (Cancelled)

11. (Previously Presented)   The method of claim 1, in which the calculating slopes of the time intervals includes dividing a difference between the time intervals corresponding to adjacent A-V delay values by a time difference between the adjacent A-V delay values.

12. (Previously Presented)   The method of claim 1, in which the selecting the A-V delay includes selecting a knee between slopes at small A-V delays and slopes at larger A-V delays.

13. (Original) The method of claim 12, in which selecting the knee includes:

forming a first linear approximation of the slopes at small A-V delays;

forming a second linear approximation of the slopes at large A-V delays; and

finding an intersection between the first and second linear approximations; and

selecting an A-V delay associated with the intersection as the A-V delay for subsequent delivery of ventricular stimulations.

14. (Previously Presented)   The method of claim 1, in which the selecting the A-V delay includes selecting the shortest of the A-V delays with which an adjacent shorter one of the A-V delays provides a larger slope than an adjacent longer one of the A-V delays.

15. (Original) The method of claim 1, further comprising communicating an indication of the selected AV delay from within a body to a location external to the body.

16. (Original) A method including:

providing ventricular stimulations separated from corresponding preceding atrial depolarizations by different atrioventricular (A-V) delays;

detecting an acceleration signal associated with the heart;

differentiating the acceleration signal to form a first derivative acceleration signal;

detecting, for each ventricular stimulation, a corresponding mitral valve closure, occurring during the same cardiac cycle as the ventricular stimulation and the preceding atrial depolarization, by detecting a peak of the first derivative acceleration signal, wherein the peak

occurs after an R-wave associated with the ventricular stimulation and before a P-wave

associated with a next atrial depolarization;

measuring P-MVC time intervals between the atrial depolarizations and the

corresponding mitral valve closures;

calculating slopes of the P-MVC time intervals against the different A-V delays; and

selecting, based on the slopes, an A-V delay for subsequent delivery of ventricular

stimulations.

17. (Original) The method of claim 16, further comprising communicating an indication of the

selected AV delay from within a body to a location external to the body.

18. (Original) A method including:

providing ventricular stimulations, separated from preceding atrial depolarizations by

different atrioventricular (A-V) delays;

detecting a mitral valve closure associated with each ventricular stimulation;

measuring P-MVC time intervals between the atrial depolarizations and the mitral valve

closures;

calculating slopes of the P-MVC time intervals against the different A-V delays; and

selecting, for subsequent delivery of ventricular stimulations, the shortest of the A-V

delays with which an adjacent shorter one of the A-V delays provides a larger slope than an

adjacent longer one of the A-V delays.

19. (Original) The method of claim 18, further comprising communicating an indication of the

selected AV delay from within a body to a location external to the body.

20. (Original) A method including:

providing ventricular stimulations, separated from preceding atrial depolarizations by

different atrioventricular (A-V) delays;

detecting a mitral valve closure associated with each ventricular stimulation;

measuring P-MVC time intervals between the atrial depolarizations and the mitral valve

closures;

storing the P-MVC time intervals and the corresponding different A-V delays;

forming a first linear approximation of the P-MVC time intervals at small A-V delays;

forming a second linear approximation of P-MVC time intervals at large A-V delays,

relative to the small A-V delays.

finding an intersection between the first and second linear approximations; and

selecting an A-V delay associated with the intersection for subsequent delivery of

ventricular stimulations.

21. (Original) The method of claim **20,** further comprising communicating an indication of the

selected AV delay from within a body to a location external to the body.